

REMARKS

Drawing Objection

The drawings are objected to under 37 CFR 1.83(a). The Examiner states that:

The drawings must show every feature of the invention specified in the claims. Therefore, the at least one external layer comprises a plurality of layers of selected materials such as a first layer of metal, a second layer of viscoelastic glue, and a third layer of gypsum must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The rejection of the drawings is not understood. Applicants believe that the drawings do show every feature of the invention specified in the claims. The Examiner's reference to the "at least one external layer comprises a plurality of layers of selected materials such as a first layer of metal, a second layer of viscoelastic glue, and a third layer of gypsum" is not understood. The Examiner may be referring to claim 10 which recites that "at least one external layer comprises a plurality of layers of selected materials." Clearly however, this structure is shown in FIG. 2 which shows a layer of galvanized metal 23, a layer of viscoelastic QuietGlue 22 and a layer of gypsum 21. In addition, the structure is also shown in FIG. 1 which shows a layer of galvanized steel 13, a layer of viscoelastic QuietGlue 12 and a layer of gypsum board 11. This structure is described explicitly as an asymmetric alternative embodiment of the invention beginning on page 13, line 32 to page 14, line 7. The specific structure, however, recited in claim 10 refers back explicitly to dependent claim 18 which refers to independent claim 17. This structure is explicitly disclosed in FIG. 2. In FIG. 2, the plurality of layers of selected materials comprise the first layer of metal 3, the second layer of viscoelastic glue 22, and the third layer of gypsum (i.e. the "selected materials") 21.

Accordingly, Applicants believe that an amended drawing is not required. However, should the Examiner persist in his objection, Applicants' attorney respectfully requests a telephone call from the Examiner to discuss what the Examiner has in mind as amendments to the drawings.

Claim Objections And Amendments To The Specification And Claims

The Examiner objected to Claims 2-6 and 8-15, 24-26 because of certain alleged informalities:

... the preamble of independent claims 1 and 7 cited as 'A laminar structure ...' and the dependent claim preambles 2-6, 8-15, and 24-26 cited as 'Structure...' are inconsistent to their independent claims 1 and 7. They should be read as 'The laminar structure...!'.

Applicants have replaced the word "laminar" in claim 1 with the word "laminated" and have changed each of the dependent claims to recite "the laminated structure". The words "laminar" and "laminated" are used synonymously in the specification and thus the substitution of "laminated" for "laminar" is merely a change in form and not substance. See the specification, page 3, line 31 where reference is made to the "laminated sheets of this invention". See also specification, page 4, lines 10 and 13 for synonymous use of these two words.

Claim 15 has been amended to recite "The laminated structure as in claim 7" thereby overcoming the Examiner's objection to claim 15.

The specification has been amended to use consistently the assignee's trademark "QuietGlue", to correct an erroneous reference to Fig. 8 on page 13 and to remove redundant language on page 13.

MacPherson Kwok Chen
& Heid LLP
1762 Technology Drive, Suite 226
San Jose, CA 95110
Telephone: (408) 392-9250
Facsimile: (408) 392-9262

Claim Rejections

The Examiner has rejected Claims 14, 15 and 24-25:

... under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase 'such as' renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Applicants have overcome this rejection to claim 14 by deleting the phrases "a layer of" and "such as wood" in claim 14. In claim 15, Applicants have replaced the phrase "such as" with the words "selected from the group consisting of" to form an acceptable Markush group.

Claim 24 has been amended to recite "The laminated structure as in claim 1 wherein the internal constraining layer comprises a cellulose material" and claim 25 has been amended to recite "The laminated structure as in claim 24 wherein said cellulose material is wood." The Examiner's objections are thus believed overcome.

Claim Rejections – 35 U.S.C § 102

The rejection of claim 40 "under 35 U.S.C. 102(b) as being anticipated by Kirschner (US 3,215,225)" is respectfully traversed. The Examiner states that:

In regard claim 40, Kirschner teaches a laminated structure comprising a layer of first material 12 having two surfaces, a core layer 13. Since the core layer 13 is cemented as by rubber cement or the like to layer 12 and to lower metal sheet 11 (col. 4, lines 14-15); thus the rubber cement serve as viscoelastic glue because it inherently having elastic and adhesive characteristics and on one surface of the layer of first material, and the core layer 13 serves as a second material 11 over the viscoelastic glue (see fig. 1).

This rejection is respectfully traversed.

Kirschner neither suggests nor discloses Applicants' claimed invention. As described by Kirschner in col. 2, lines 51-56:

FIGURE 1 shows a typical panel embodying the invention constructed of four layers of material. *The outside faces 10 and 11 of the panel are sheet metal*, such as sheet steel, stainless steel, aluminum, brass, and the like, depending on the acoustical, thermal or other requirements of the panel. (*Italics added*).

Applicants' claim 1 has been amended to recite a structure comprising "two external layers of a non-metallic material". Claim 1 and claims 2-6, dependent directly or indirectly upon claim 1, thus clearly distinguish from Kirschner. In addition, independent claim 7 distinguishes from Kirschner by calling for "two internal layers of a viscoelastic glue, one such layer on each side of said internal layer". Kirschner neither suggests nor discloses using a viscoelastic glue.

While Kirschner discusses placing "a layer of high efficiency viscoelastic damping material 12" on "the underside of facing [metal] sheet 10" (Kirschner, col. 2, lines 61-63), the damping layer 12 is described as "essentially an amorphous polymer, such as polyvinyl chloride, polyvinyl alcohol, rubber, polyisobutylene, polypropylene, polyurethanes, polytetrafluoroethylene and the like, preferably containing an inert filler such as vermiculite, expanded mica, talc, lead, granulated polystyrene aluminum oxide and the like. Suitable plasticizers for improving or maintaining the viscoelastic properties of the material may be included, also." (Kirschner, col. 2, lines 63-71).

Kirschner then states that the "viscoelastic layer 12 may be applied to the metal sheet 10 by spraying, painting, spreading or the like, or may be cemented as a separate sheet to the metal sheet 10 by epoxy cement or the like." (Kirschner, col. 3, lines 6-9). The Kirschner patent then goes on to state in col. 4, lines 8-17 that:

The acoustical panel structure in FIGURE 1 is completed by interposing between layer 12 and lower metal sheet 11 the fire resistant acoustical core 13, which is self-supporting building board such as used in building construction, e.g., gypsum or wall board, asbestos board, and boards formed of mineral or

vegetable fibers. The core 13 is cemented as by rubber cement or the like to layer 12 and to lower metal sheet 11, and the resulting sandwich united under pressure into the single finished panel shown in FIG. 1.

Applicants' structure as recited claim 7 clearly distinguishes from Kirschner by calling for "two internal layers of a viscoelastic glue, one such layer on each side of said internal layer". Kirschner's viscoelastic layer 12 neither suggests nor anticipates Applicants' use of "two internal layers of a viscoelastic glue." Accordingly, independent claim 7, and claims 8-15 dependent upon claim 7, likewise distinguish patentably over Kirschner.

Claims 24-26, dependent on claim 1, also clearly distinguish over Kirschner for at least the reason set forth above by which claim 1 distinguishes over Kirschner.

Claim Rejections – 35 U.S.C. §103

The Examiner has rejected claims 1-15, 24-26 "under 35 U.S.C. 103(a) as being unpatentable over Nudo (US 2004/0177590) in view of Kirschner (US 3,215,225)." This rejection is also respectfully traversed.

The Examiner states that with respect to "claims 1, 7, 8, 15, 26, Nudo teaches a laminar structure comprising two external layers of a material 22, at least one internal constraining layer 16 is made out of plastic, and two or more internal layer 16, and two or more internal layers of glue 20 separated by said at least one internal constraining layer 16."

The Examiner admits that Nudo "does not teach specifically the glue layers 20 are viscoelastic." (Office Action page 5). The Examiner then states that "Kirschner teaches a laminated structure comprising two external layers of material 10, 11, a constraining layer 12; a core layer 13 is cemented as by rubber cement or the like to layer 12, thus the rubber cement layer serves as a viscoelastic layer." The Examiner also states that "it would have been obvious to a person of ordinary skill in the art to combine Nudo with Kirschner for the

viscoelastic layer. The motivation for doing so would have been to provide a better absorption of sound for the building panel."

This rejection is respectfully traversed. Nudo discloses a structure using a "central honeycomb core layer having a pair of bonding layers adhered thereto." (Nudo, ¶ 0010).

Nudo's invention is intended to provide a "composite structural panel to provide a laminated panel structure which is adapted to be mounted to a building or other structure for protection from the elements." (Nudo, ¶ 0011). The composite structural panel "is formed of a central honeycomb core layer having a pair of bonding layers adhered thereto.... The bonding layers are formed of a suitable porous reinforcement material." (Nudo, ¶ 0010). Accordingly, Nudo neither suggests nor discloses Applicants' invention either taken singly or in combination with Kirschner. By having a central honeycomb layer, the panel suggested by Nudo would not be appropriate for sound reduction. By having bonding layers "formed of a suitable porous reinforcement material" the acoustical properties of the resulting panel would be even less satisfactory. Certainly, Nudo neither suggests nor discloses using a viscoelastic glue as part of the panel to absorb sound. To the contrary, Nudo's use of a porous reinforcement material for the bonding layer explicitly teaches away from using a viscoelastic glue to absorb sound. Accordingly, the Examiner's statement that one would be motivated to combine Nudo with Kirschner for the viscoelastic layer is incorrect. Rather, Nudo teaches away from the combination of Nudo with Kirschner by teaching the use of "porous reinforcement material" and the use of a "central honeycomb core layer". Therefore, the rejection of claims 1, 7, 8, 15 and 26 "under 35 U.S.C. 103(a)" is incorrect and is respectfully requested to be withdrawn.

The Examiner further states (Office Action, p. 6) with respect to claims 2, 5, 6, 13-14, and 24-25 that:

... Nudo and Kirschner teach the claimed invention except for the constraining layer 16 is made out of sheet metal, galvanized steel, wood, etc. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the constraining layer is a sheet of galvanized steel, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice because the galvanized steel or wood would provide more integrity than plastic.

This rejection is respectfully traversed. There is no disclosure or suggestion whatsoever in either Nudo or Kirschner of the structure disclosed and claimed by Applicants. In particular, Kirschner's structure requires two metal external layers on the panel whereas Nudo teaches honeycombed central layers and a porous glue or "bonding layer" on each side of the honeycombed layer. The combination of these two elements is inherently contradictory since the Nudo device will not serve as an acoustical barrier given the openings in the honeycombed layer and the porous glue whereas the Kirschner device has metal layers on the external surface which Applicants expressly do not claim. Accordingly, this rejection should be withdrawn and Applicants respectfully request that the Examiner do so.

With respect to claims 3, 4 and 9, the Examiner states (Office Action, p. 6) that:

... Nudo and Kirschner teach the claimed invention except for the two external layers comprise each a selected thickness gypsum board layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have each of the external layers is gypsum board layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice because the gypsum board is the most common uses for the wall building panels.

Applicants' use of gypsum for the external layers together with at least one internal constraining layer and two or more internal layers of "a viscoelastic glue separated by said at

MacPherson Kwok Chen
& Heid LLP
1762 Technology Drive, Suite 226
San Jose, CA 95110
Telephone: (408) 392-9250
Facsimile: (408) 392-9262

least one internal constraining layer" is neither suggested nor disclosed by Nudo and Kirschner. This structure is recited in claims 3 and 4. Claim 9, dependent indirectly on claim 7, likewise has a similar structure. In particular, claim 7 calls for "at least one internal layer of a selected material;" and "two internal layers of a viscoelastic glue, one such layer on each side of said internal layer". Again, neither Nudo nor Kirschner teach the use of two internal layers of a viscoelastic glue one on each side of an internal layer. Accordingly, this rejection also should be withdrawn.

The Examiner states (Office Action, p. 6) that:

In regard claims 10-12, Nudo and Kirschner teach the claimed invention except for the at least one external layer comprises a plurality of layers of a first layer of metal, a second layer of viscoelastic glue, a third layer of gypsum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have one more laminated structure for the external layer comprising a first layer of metal, a second layer of viscoelastic glue, a third of gypsum, since it has been held that mere duplication of the essential parts of a device involves only routine skill in the art. The motivation for doing so would have been to provide a thicker laminated panel structure thus enhance more sound absorption.

Again, Nudo and Kirschner cannot be combined. Nudo, as described above, teaches away from Kirschner. Claims 10-12 are dependent indirectly on claim 7. Claim 7 distinguishes from the Kirschner and Nudo structures by calling for "at least one internal layer of a selected material" and "two internal layers of a viscoelastic glue, one such layer on each side of said internal layer". Neither Nudo nor Kirschner disclose this structure. As is discussed above, Nudo teaches porous bonding materials on either side of a honeycomb layer. Such teaching is directly contradictory to what is taught by Applicants and contrary to Kirschner's use of a viscoelastic layer 12 (not a viscoelastic glue). Accordingly, withdrawal of this rejection is respectfully requested.

The rejection of claim 41 "under 35 U.S.C. 103(a) as being unpatentable over Kirschner" is also respectfully traversed. The Examiner states (Office Action, p. 7) that:

In regard claim 41, Kirschner teaches the claimed invention as stated. And wherein the second material 11 is thinner than the first material layer 12 (as shown in fig. 1); However, Kirschner does not specifically teach the layer of second material falls in the range of 1/10-1/2 of the first material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a first layer is thicker than a second layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. The motivation for doing would have been to maximize to the sound absorption on the first layer.

Again, this rejection is respectfully traversed. Kirschner neither suggests nor discloses the structure recited in claim 41 which is dependent on independent claim 40. Claim 40 distinguishes from Kirschner by calling for "a layer of first non-metallic material having two surfaces, one of said two surfaces comprising an outer surface" "a layer of viscoelastic glue on the other of said two surfaces; and a layer of a second material over said viscoelastic glue". Again, Kirschner neither teaches nor suggests the use of a viscoelastic glue as recited in claims 40 and 41. Accordingly, withdrawal of this rejection is respectfully requested.

MacPherson Kwok Chen
& Heid LLP
1762 Technology Drive, Suite 226
San Jose, CA 95110
Telephone: (408) 392-9250
Facsimile: (408) 392-9262

CONCLUSION

Withdrawal of the rejections of claims 1-15, 24-26, 40 and 41 and allowance of these claims is respectfully requested. Should the Examiner's action be other than allowance, the Examiner is requested to telephone Applicants' attorney at (408) 392-9250.

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Respectfully submitted,



Alan H. MacPherson
Attorney for Applicants
Reg. No. 24,423

MacPherson Kwok Chen
& Heid LLP
1762 Technology Drive, Suite 226
San Jose, CA 95110
Telephone: (408) 392-9250
Facsimile: (408) 392-9262